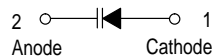


# Silicon Hyper-Abrupt Tuning Diodes

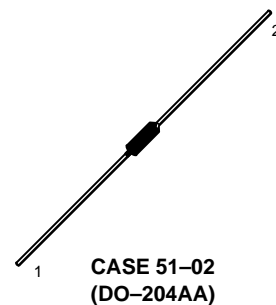
These devices are designed with high capacitance and a capacitance change of greater than TEN TIMES for a bias change from 2.0 to 10 volts. They provide tuning over broad frequency ranges; tune AM radio broadcast band, general AFC and tuning applications in lower RF frequencies.

- High Capacitance: 120–250 pF
- Large Capacitance Change with Small Bias Change
- Guaranteed High Q
- Available in Standard Axial Glass Packages



**MV1403**  
**MV1404**  
**MV1405**

**120–250 pF**  
**12 VOLTS**  
**HIGH TUNING RATIO**  
**VOLTAGE-VARIABLE**  
**CAPACITANCE DIODES**



## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage	$V_R$	12	Vdc
Forward Current	$I_F$	250	mAdc
Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	400 2.67	mW mW/ $^\circ\text{C}$
Junction Temperature	$T_J$	+125	$^\circ\text{C}$
Storage Temperature Range	$T_{\text{stg}}$	–65 to +200	$^\circ\text{C}$

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage ( $I_R = 10 \mu\text{Adc}$ )	$V_{(\text{BR})R}$	12	—	—	Vdc
Reverse Voltage Leakage Current ( $V_R = 10 \text{ Vdc}$ , $T_A = 25^\circ\text{C}$ )	$I_R$	—	—	0.1	$\mu\text{Adc}$
Series Inductance ( $f = 250 \text{ MHz}$ , Lead Length $\approx 1/16''$ )	$L_S$	—	5.0	—	nH
Case Capacitance ( $f = 1.0 \text{ MHz}$ , Lead Length $\approx 1/16''$ )	$C_C$	—	0.25	—	pF

Device	C <sub>T</sub> , Diode Capacitance			Q, Figure of Merit	TR, Tuning Ratio	
	V <sub>R</sub> = 2.0 Vdc, f = 1.0 MHz pF			V <sub>R</sub> = 2.0 Vdc, f = 1.0 MHz	C <sub>1</sub> /C <sub>10</sub> f = 1.0 MHz	C <sub>2</sub> /C <sub>10</sub> f = 1.0 MHz
	Min	Nom	Max	Min	Min	Min
MV1403	140	175	210	200	—	10
MV1404	96	120	144	200	—	10
MV1405	200	250	300	200	—	10

## TYPICAL CHARACTERISTICS

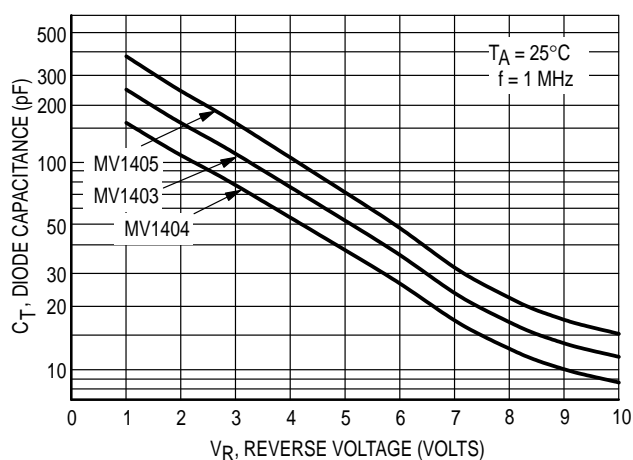


Figure 1. Diode Capacitance versus Reverse Voltage

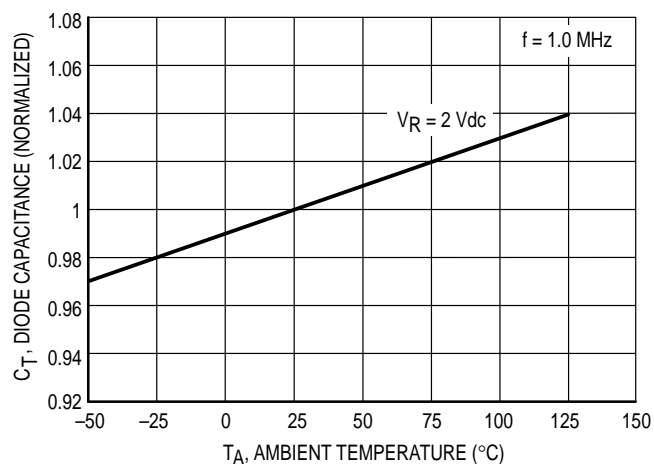


Figure 2. Diode Capacitance versus Ambient Temperature

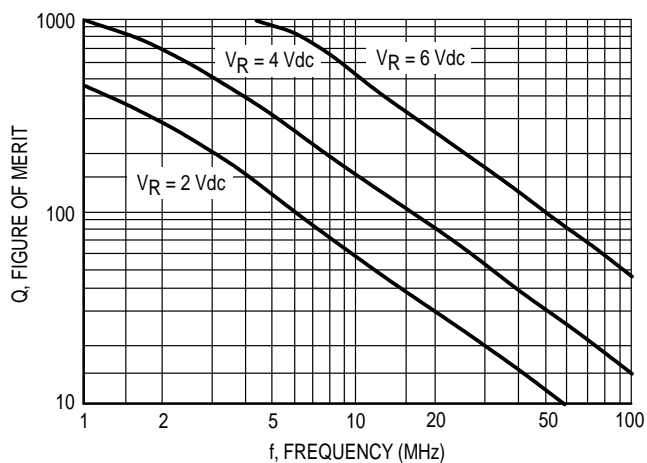
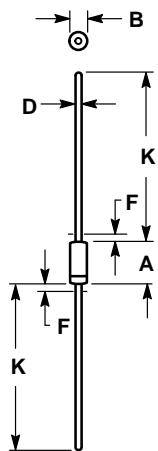


Figure 3. Figure of Merit versus Frequency

PACKAGE DIMENSIONS




- NOTES:
- 1. PACKAGE CONTOUR OPTIONAL WITHIN DIA B AND LENGTH A. HEAT SLUGS, IF ANY, SHALL BE INCLUDED WITHIN THIS CYLINDER, BUT SHALL NOT BE SUBJECT TO THE MIN LIMIT OF DIA B.
  - 2. LEAD DIA NOT CONTROLLED IN ZONES F, TO ALLOW FOR FLASH, LEAD FINISH BUILDUP, AND MINOR IRREGULARITIES OTHER THAN HEAT SLUGS.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	5.84	7.62	0.230	0.300
B	2.16	2.72	0.085	0.107
D	0.46	0.56	0.018	0.022
F	—	1.27	—	0.050
K	25.40	38.10	1.000	1.500

All JEDEC dimensions and notes apply.

CASE 51-02  
(DO-204AA)  
ISSUE E

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